UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00530

July 26, 2004

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, Oregon 97301

Re: Endangered Species Act Section 7 Formal Conference, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Mill Creek Fish Passage Project, Siletz River Basin, Lincoln County, Oregon (6th Field HUC No. 171002040502)

Dear Mr. Patron:

Enclosed is a conference opinion prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the Federal Highway Administration (FHWA) funding of the Mill Creek Fish Passage Project, Lincoln County, Oregon. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), which are proposed for listing as threatened under the ESA. As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary to avoid or minimize the effects of incidental take associated with these actions. However, the incidental take statement does not become effective until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for Pacific salmon and groundfish species. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Please direct any questions regarding this letter to Tom Loynes, fisheries biologist, in the Oregon Coast/Lower Columbia Habitat Branch of the Oregon State Habitat Office at 503.231.6892.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Frannie Brindle, ODOT
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Endangered Species Act - Section 7 Consultation Conference Opinion

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Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Mill Creek Fish Passage Project
Siletz River Basin , Lincoln County, Oregon
(HUC No. 171002040502)

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA Fisheries Northwest Region
Date Issued:	July 26, 2004

Issued by:

D. Robert Lohn
Regional Administrator

Refer to: **2004/00530**

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1. INTRODUCTION

1.1 Background

On April 23, 2004, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation on the proposed funding of the Mill Creek Fish Passage Project and essential fish habitat (EFH) consultation pursuant to section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for a project to restore fish passage at a culvert on Mill Creek. NOAA Fisheries also received a complete biological assessment (BA) with the request. The proposed action is the funding of the construction of a roughened chute, which will remove a barrier below an existing culvert. The project applicant is the Oregon Department of Transportation (ODOT) and FHWA funds would partially finance this project and constitute the Federal nexus. ODOT is responsible for the project design and management.

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service and NOAA Fisheries, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This conference opinion (Opinion) is the product of an interagency conference pursuant to section 7(a)(2) of the ESA and implementing regulations found at 50 CFR 402.

The analysis also fulfills the EFH requirements under the MSA. The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency that may adversely affect EFH (§305(b)(2)).

The proposed action is the Federal Highway Administration's (FHWA) funding of the Mill Creek Fish Passage Project. The project proposed by the FHWA will enable fish passage on Mill Creek, a tributary to the Siletz River. The administrative record for this consultation is on file at the Oregon State Habitat Office of NOAA Fisheries. This Opinion addresses the effects of construction of the fish passage project at Mill Creek on Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*).

1.2 Proposed Action

This project proposes to achieve fish passage at the Mill Creek culvert on Oregon Highway 229 through construction of a roughened chute at the outlet. A roughened chute is a reconfigured channel using rock and streambed materials to eliminate upstream fish passage barriers. The

roughened chute will be constructed using a graded mixture of boulders, cobbles, and fines that will extend from the invert of the culvert outlet downstream for approximately 33 meters (m). The proposed roughened chute was designed to restore fish passage and to simulate the existing natural streambed during a range of flows similar to the existing channel downstream. Construction of the roughened chute will require diversion of the stream, isolation of the work area, de-watering of the work area, and fish removal. Temporary water management will entail damming the creek inside the culvert using the existing weirs, pumping during construction, and gravity flow via pipes during off-hours and at night.

Staging can take place on the utility road beside the highway. Construction will take place during the in-water work period of July 1 to August 31, 2004. The duration of the project is anticipated to be one week. Access will be via an existing utility road that parallels the highway, crosses over the culvert, and continues down a slope to the west bank of the creek. The width of the access will be approximately 4.9 m. The contractor will put down geotextile fabric, top dressed with 30 to 46 centimeters (cm) of base rock. Geotextile fabric is a woven material that reduces surface erosion and sometimes allows vegetative growth. Some limited grading will also be required along the existing utility access road. Some minor grading and leveling will be required at the bottom of the slope on the edge of the creek. Erosion controls will be placed along the access road down the bank slope above the creek.

Minor disturbance of riparian vegetation will be necessary on the edge of the stream where equipment will gain access and rock material will be hauled in. Access down the bank slope between the existing utility access road and the creek will require removal of upland trees. The trees to be removed are all at the junction of the access road, down the bank slope and the existing utility access road, approximately 41 m from the ordinary high water (OHW) mark of Mill Creek. Trees to be removed include two 15 to 20 centimeter (cm) diameter at breast height (dbh) red alder, one 15 to 20 cm dbh Douglas-fir, eight red alder saplings less than 8 cm dbh, and up to two red alder trees 20 to 30 cm dbh.

Wattles will be placed across the bank slope access for erosion control. Wattles are cylindrical erosion control booms which are sometimes filled with straw. In some cases, wattles can be filled with a growing medium which allows vegetative growth and adds stability with increased rooting of the vegetation. The brush and logs to be cut will be put back over the road when the project is completed. The access road will then be seeded and planted.

Construction of the roughened chute will entail dumping fill rock and granular material into the channel from the top of the west bank and placing it with a trackhoe or other equipment. The boulders, rocks, and gravel will be placed and tamped in lifts. The material will probably be bucket tamped, which will help settle the gravel and fines around the rocks and boulders. Material will be placed in 1.2-m lifts and will be bucket-compacted. Gravel and fines will be dumped and tamped around the larger rock during each lift to build up and seal the new streambed, similar to a natural channel. Fines will be added to the extent that stability is not compromised.

Construction of the roughened chute will require approximately 268 m^3 of riprap material. Boulders will be English Class 2000 (0.9 m in diameter). The roughened chute will be 1.4 m thick at its maximum depth, tapering down to approximately 0.6 m thick at the toe. Chute material will be placed on the apron and will be 0.8 to 0.9 m deep on the apron. The top of the chute will extend up to the outlet of the culvert and will rise above the invert of the culvert to backwater the culvert. The largest boulders will be placed immediately downstream from the apron to help dissipate energy during high flows. Approximately 31 m^3 of cobbles will be specified to be used as needed during construction of the chute. Fine sand and silt excavated as part of construction near the apron will be placed on top of the boulders, rocks, and cobble to help seal the chute so that flow does not percolate into the material. Fine sand and silt deposited by the stream in future years will also be expected to contribute to sealing the surface of the chute. No fines will be hauled in since sufficient quantities of fines will be excavated during construction.

Low flow pools will be created in the thalweg of the chute to aid fish passage during low flow periods. At the downstream end of the chute, a trench will be excavated across the channel and filled with boulders to anchor the toe of the chute. Downstream from the toe of the chute for another 15 m, clusters or individual large boulders will be randomly placed and buried to help catch bedload. The channel design includes a 4.6-m wide, 0.3-m deep low flow channel and a summer low flow thalweg that follows the current channel meander. The sides of this low flow channel then taper up to a bench on the west side of the creek that is 3 to 4.8 m wide. The west side of this bench then slopes up to tie in to the west bank. The chute material will tie into the existing creek banks without any grading or excavation of the existing creek banks. No planting will be done in the rock of the chute. No root wads will be incorporated into the chute because the depth of chute material does not allow adequate anchoring of logs and root wads.

The channel will be raised as a result of chute construction, and the existing OHW mark elevation of approximately 139 m just below the apron will be raised to approximately 140 m elevation.

Construction of the roughened chute will require diversion of the stream, isolation of the work area, de-watering of the work area, and removal of fish. Construction of the roughened chute will be done during the in-water work period of July 1 to August 31. The stream will be diverted into a pipe or flume during construction of the chute. The creek will be de-watered and fish will be removed by qualified ODOT and/or Oregon Department of Fish and Wildlife (ODFW) fish biologists. Boulders will be end-dumped down the west embankment. The ODOT Project Inspector and/or an ODOT Hydraulic Engineer, or ODFW Biologist will be onsite during channel enhancement activities to monitor the contractor's activities. Erosion control measures will be implemented. A trackhoe and/or other equipment will be used to place rocks for the chute. The trackhoe will operate from the de-watered creek channel. Sediment mats (Sedimats) and other devices will be placed below the isolated reach to contain sediment. The trackhoe will be moved out of the creek channel at the end of each shift and fueling/maintenance will occur at an upland site at least 50 m from the creek. Duration of the project will be less than two weeks. Construction of the roughened chute is expected to take approximately one week. The stability

of a roughened chute should be long-term, more than a century, depending on the force of periodic flood events.

The site restoration goal is renewal of habitat access, water quality, channel conditions, flows, watershed conditions, and other processes that maintain productive habitats. Disturbed areas associated with access will be restored at the end of the project. Specifications will call for native seed and weed-free straw to be used along the access route, along with installing water bars along the skid road on project completion. The roughened chute slopes will be reshaped to a natural slope, pattern, and profile. Disturbed areas will be seeded and mulched with a permanent erosion control mix and the bank access area will be seeded and/or replanted with native trees, shrubs, and herbaceous plants. No pesticide application will be allowed and no surface application fertilizer will be used within 15 m of Mill Creek.

1.3 Conservation Measures

Conservation measures in the following categories are proposed by the FHWA: (1) Timing of in-water work, (2) fish salvage from within the work area; (3) adherence to NOAA Fisheries' fish passage and screening guidelines, and (4) pollution and erosion control. NOAA Fisheries regards the conservation measures included in the BA that accompanied the consultation request as intended to minimize adverse effects to anadromous salmon habitat, and considers them to be part of the proposed action.

In addition, the FHWA proposed measures that will prevent the death or injury of anadromous salmonids. These will limit the "take" of OC coho. These are also considered to be part of the proposed action.

1.4 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area (project area) involved in the proposed action (50 CFR 402.02). For this consultation, NOAA Fisheries defines the action area as all riparian and riverine habitats accessible to OC coho salmon from the outlet apron of the Mill Creek culvert, approximately 15 m upstream to the upper diversion and 244 m downstream to the lower diversion. The action area also extends 152 m to the west and 91 m to the east of the crossing along the Siletz Highway.

2. ENDANGERED SPECIES ACT

2.1 Conference Opinion

NOAA Fisheries listed OC coho salmon as threatened under the ESA on August 10, 1998 (63 FR 42587), and issued protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Critical habitat is not designated or proposed for this species at this time.

In September 2001, in the case *Alsea Valley Alliance v. Evans*, U.S. District Court Judge Michael Hogan struck down the 1998 ESA listing of OC coho salmon and remanded the listing decision to NOAA Fisheries for further consideration. In November 2001, the Oregon Natural Resources Council appealed the District Court's ruling. Pending resolution of the appeal, in December 2001, the Ninth Circuit Court of Appeals stayed the District Court's order that voided the OC coho listing. While the stay was in place, the OC coho evolutionarily significant unit (ESU) was again afforded the protections of the ESA.

On February 24, 2004, the Ninth Circuit dismissed the appeal in *Alsea*. On June 15, 2004, the Ninth Circuit returned the case to Judge Hogan and ended its stay. Judge Hogan's order invalidating the OC coho listing is back in force. Accordingly, OC coho are now not listed, and ESA provisions for listed species, such as the consultation requirement and take prohibitions, do not apply to OC coho.

In response to the *Alsea* ruling, NOAA Fisheries released its revised policy for considering hatchery stocks when making listing decisions on June 3, 2004 (69 FR 31354). NOAA Fisheries completed a new review of the biological status of OC coho salmon, and applying the new hatchery listing policy, proposed to list OC coho salmon as a threatened species on June 14, 2004 (69 FR 33102). NOAA Fisheries must make a final decision on the proposed OC coho salmon listing by June 14, 2005.

This Opinion considers the potential effects of the proposed action on OC coho salmon, which occur in the action area, and on essential fish habitat for Chinook salmon (*O. Tshawytscha*) and coho salmon.

2.1.1 Biological Information

Estimated escapement of coho salmon in coastal Oregon was about 1.4 million fish in the early 1900s, with harvest of nearly 400,000 fish (Weitkamp *et al.* 1995). Abundance of wild OC coho salmon declined from about 1965 to 1975 (Nickelson *et al.* 1992). Lichatowich (1989) concluded that production potential (based on stock recruit models) for OC coho salmon in coastal Oregon rivers was only about 800,000 fish, and associated this decline with a reduction in habitat capacity of nearly 50%. Recent estimates of wild spawner abundance in this ESU has ranged from 16,500 adults in 1990, to nearly 60,000 adults in 1996, and 238,700 adult coho in 2002 (ODFW 2004).

Estimated spawning populations for naturally-produced coho salmon in the Mill Creek watershed have fluctuated, from a low of 0 in 1998, to a high of 44 in 2002. Results are summarized in Table 1. Although 2003 numbers are preliminary, the estimates of wild OC coho abundance in the Siletz River basin (10,010 coho salmon) nearly quadruples 2001's numbers (2,700 coho salmon), and is seven times 2000's numbers (1,437 coho salmon). The Siletz is one of the few Mid-coast streams that showed this significant increase in abundance in 2003 (ODFW 2004)

Table 1. OC coho and Chinook spawner abundance based on ODFW peak counts in segments of North Fork and South Fork of Mill Creek - random surveys done in 1996, 1998-1999, and 2001-2002 (Streamnet 2004).

Estimated # of Coho Spawners	**1996**	**1998**	**1999**	**2001**	**2002**
North Fork of Mill Creek	Not Surveyed	0	5	7	44
South Fork of Mill Creek	6	1	Not Surveyed	20	Not Surveyed

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402.02 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations: (1) Consider the biological requirements of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species.

The next step requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (*i.e.*, effects on essential habitat features). The second part focuses on the species itself. It describes the action's effects on individual fish, or populations, or both, and places these effects in the context of the ESU as a whole. Ultimately, the analysis seeks to answer the question of whether the proposed action is likely to jeopardize a listed species' continued existence. If so, the last step is the identification by NOAA Fisheries of possible reasonable and prudent alternatives for the action that avoid jeopardy.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into

account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The biological requirements are population characteristics necessary for OC coho salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

Essential habitat features for juvenile rearing (growth and development) areas include adequate water quality, water quantity, water velocity, cover and shelter, dietary and spatial resources, riparian vegetation, and safe passage to upstream and downstream habitats. Essential habitat features for juvenile migration corridors include adequate water quality, water quantity, water velocity, cover and shelter, dietary resources, riparian vegetation, and space. Essential habitat features for adult migration corridors include adequate water quality, water quantity, water velocity, cover and shelter, riparian vegetation, and space. The essential habitat features for this consultation will include those for migration and rearing for both juveniles and adults.

2.1.4 Environmental Baseline

In step two of NOAA Fisheries' analysis, the relevance of the environmental baseline in the action area is evaluated. Regulations implementing section 7 of the ESA (50 CFR 402.02) define the environmental baseline as the past and present effects of all Federal, state, or private actions and other human activities in the action area. The environmental baseline also includes the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation, and the effects of state and private actions that are contemporaneous with the consultation in progress.

Land uses in the action area include rural residential, agricultural, forestry, and recreation. Riparian areas and stream channels in coastal watersheds have been damaged by development activities related to these land uses as well as by the use of splash dams, stream cleaning, and gravel mining (FEMAT 1993, Botkin *et al.* 1995, OCSRI 1997). Habitat changes that have contributed to the decline of OC coho in the action area include: (1) Reduced biological, chemical, and physical connectivity between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment loads; (3) reduced instream and riparian large woody debris which traps sediments, stabilizes streambeds and streambanks, and forms complex instream structures; (4) reduced vegetative canopy; (5) changed stream channel morphology (*e.g.*, increased width-to-depth ratios and entrenchment); (6) degraded water quality; (7) altered base and peak stream flows; and (8) fish passage impediments (OCSRI 1997).

The Siletz River is among the larger coastal rivers in the mid-Oregon coast region. It is approximately 129 kilometers (km) in length and drains an area of 932 km^2, entering the Pacific

Ocean just south of Lincoln City. The Siletz River, from river kilometer (RKm) 11.3 to 75.3, is listed as a Water Quality Limited Stream on the 2002 303(d) list by the Oregon Department of Environmental Quality (ODEQ 2002) for exceeding summer stream temperature requirements. Mill Creek is also on ODEQ's 303(d) list of water quality limited streams for temperature.

The bulk of production for the OC coho salmon ESU is skewed to its southern portion where the coastal lake systems (*e.g.*, Tenmile, Tahkenitch, and Siltcoos River basins) and the Coos and Coquille Rivers are more productive. The proposed action area is in the northern half of the ESU where production is more depressed and habitat in the action area is under seeded.

NOAA Fisheries concludes that not all of the biological requirements of the listed species within the action area are being met under current conditions. Based on the best available information on the status of OC coho salmon, including population status, trends, and genetics, and the environmental baseline conditions within the action area, significant improvement in habitat conditions is needed to meet the biological requirements of OC coho salmon for survival and recovery.

2.1.5 Analysis of Effects

In the next step of NOAA Fisheries' jeopardy analysis, the effects of proposed actions on listed species are evaluated, and the biologist provides an opinion about whether the species can be expected to survive with an adequate potential for recovery if those actions go forward.

2.1.5.1 Effects of the Proposed Action

Water Quality - Turbidity

In the short term, sediment from construction activities could cause turbidity in the stretch of Mill Creek in the project area. In the long term, restoration of fish passage at the culvert will allow for access to habitat upstream.

The quality of the water that fish encounter on their migration is extremely important, and can determine such things as feeding and breeding success rates, disease levels, growth rates, and predation rates. Major elements of water quality critical to salmon are turbidity, suspended sediment, chemical contamination, and temperature. Turbidity and fine sediments can reduce prey detection, alter trophic levels, reduce substrate oxygen, smother redds, and damage gills, and cause other deleterious effects.

The effects of suspended sediment and turbidity on fish, as reported in the literature, range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

During water compaction, there is potential for turbid waters to escape the work area subjecting salmonids downstream to sediment and detrimental conditions. In addition, sediment-laden water created within isolated work areas could escape, resulting in effects to the aquatic environment downstream from the project site. This will be avoided by pumping the turbid waters up to a settling pond allowing sediments to settle out before infiltration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al*. 1980, Birtwell *et al*. 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al*. 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al*. 1987). Turbidity resulting from the proposed project will be confined to the construction and removal of the temporary structures and the construction within the stream channel. The turbidity resulting from this in-water work will be minor, short-term, and local.

Turbidity is defined as a measurement of relative clarity due to an increase in dissolved or suspended, undissolved particles (measured as total suspended solids, or TSS). At moderate levels, turbidity can reduce primary and secondary productivity and, at high levels, has the potential to interfere with feeding and to injure and kill adult and juvenile fish (Spence *et al.* 1996, Bjornn and Reiser 1991). Servizi (1988) observed an increase in sensitive biochemical stress indicators and an increase in gill flaring when salmonids were exposed to highly turbid water (gill flaring allows the fish to create sudden changes in buccal cavity pressure, which acts similar to a cough). Salmonid fishes may move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Servizi and Martens 1991). Juvenile salmonid fishes tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, except when the fish must traverse these streams along migration routes (Lloyd *et al.* 1987).

Increases in suspended sediment and turbidity will be short-term and limited to activities associated with construction of the roughened chute. An erosion and sediment control plan and pollution control plan specifying containment measures will be developed to minimize water quality effects. The work area will be isolated using sandbag diversions at the upper and lower sections of the work area and Sedimats will be deployed to minimize turbidity effects.

A potential positive effect of increased turbidity is providing refuge and cover from predation. Fish that remain in turbid waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In habitats with intense predation pressure, this provides a beneficial trade-off of enhanced survival in exchange for physical effects such as reduced growth. These temporary increases in turbidity are not likely to physiologically stress and displace adults, since the work will take place during periods when adults are not present (*i.e.*, during the in-water work window). Rearing juvenile salmon may be present, but construction is proposed to occur only during the summer in-water work window, when juvenile abundance is

likely low. Due to the measures to isolate the work from the creek flow, NOAA Fisheries does not expect serious levels of mortality in the juvenile salmonid population.

Exposure duration is a critical determinant of the occurrence and magnitude of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonid fishes have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with floods, and are adapted to such exposures. Adult and larger juvenile salmonid fishes appear to be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, chronic exposure can cause physiological stress that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

The proposed construction could temporarily increase turbidity downstream from the work area during and after construction for a total of approximately 7 to 10 hours per in-water construction activity. This would not result in substantial effects to salmonids downstream.

Water Quality - Chemical Contamination

Since equipment will be operating in the channel (isolated area), there is potential for chemical contamination due to leaks and spills. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Chemical contamination can reduce fecundity and fertility, increase disease, shift biotic communities, and reduce the overall health of migrating salmon.

The proposed action includes a spill containment and control plan. Because the construction will take place over a period of no more than one week, any pollution from the use of machinery is expected to be temporary and short-lived.

In-water work area isolation will allow the work to occur in the dry, thereby reducing the potential of chemical contaminants entering the actively flowing water and direct impacts to fish. During channel modification activities, passage will be blocked by the diversion and fish will be removed from the work area and moved an area downstream with adequate cover and water quality.

Water Quality - Temperature

A major portion of this project entails using rock to rebuild a stream channel. The proposed additional amount of rock in the channel increases the possibility of elevated water temperatures due to solar radiation. This potential will be minimized by maintaining a low-flow channel during the summer months, decreasing the width to depth ratio. Over time, the riparian zone will encroach on the stream, will provide shade and vegetation, and will grow beside the channel.

The water above the upper diversion could also experience elevated temperatures. Maintaining downstream flow and fish passage will allow fish to move without being trapped in this pool, and exposed to elevated stream temperatures and predation.

Stream Channel Conditions

The in-water work proposed will also alter the substrate in the stream around the existing culvert. The substrate will be disturbed when the new channel is constructed. When the channel is watered up later in the summer after project completion, there will be a short-term suspension of fine sediments within the work area. In the long term, the substrate will become more stable and even, due to the elimination of the step in the channel. The streambank and channel will be temporarily disturbed by placement of rocks, which will be completed in the dry. If remedial action is required due to rock movement or shifting, there may be a need to adjust boulders and disturb the substrate; potentially causing short-term suspension of fine sediments. This could cause hydraulic jumps, turbulence, or velocity barriers to fish passage if not corrected. All remedial actions will be completed during the ODFW in-water work period and from above the OHW mark.

Direct Harm

Individual fish may be injured or killed during fish removal and construction activities. The probability of injury or death will be reduced by completion of these activities during the preferred in-water work period, when fewer fish are likely to be present. Most work will occur during the preferred in-water work timing guideline of July 1 through August 31 (ODFW 2000). During this window, streamflow is typically low, fish presence is reduced, and rainfall is minimal. The area will need to be isolated and fish removed so that equipment can work within a dry channel, eliminating turbidity and the potential for direct take of salmonids. The resulting lack of upstream fish passage during construction will be the same condition that exists now during low-flow conditions.

Fish removal activities will be in accordance with NOAA Fisheries fish handling guidelines (NOAA Fisheries 2000). Work area isolation can result in a loss of aquatic invertebrates due to dewatering areas within the wetted channel. Individual fish may also be injured or killed as a result of fish removal from the work area. The probability of this is low because these activities will be conducted using containment measures isolating the work area with coffer dams followed by a fish removal. Any fish removed from the isolated work areas will experience high stress, with the possibility of up to a 5% delayed mortality rate depending on rescue method. Fish salvage will occur within the isolated work area. Mortality and/or injury to fish species may occur during handling. Delayed mortality may occur due to stress from the handling. NOAA Fisheries does not expect substantial mortality, since the work will occur during a time frame when few fish are expected to be present.

Although fish passage may be temporarily impaired by isolating the channel in Mill Creek during construction of the roughened chute, the proposed action potentially will result in improved year-round fish passage conditions for both adult and juvenile salmonids within Mill Creek. If the roughened chute works as postulated, long-term, beneficial effects to fish passage

are expected in Mill Creek. If fish passage is not established as a result of this project, ODOT will pursue remedial action to repair and make adjustments. Placing large rock in a stream channel has the potential to create sub-surface flow due to porosity. This could create a passage barrier at moderate and lower flows. This project will utilize methods that will reduce the risk of sub-surface flow by mixing of different sizes of material including fines and water compaction. If porosity is not eliminated after completion of the project, remedial actions will entail remixing of fines with the substrate and water compaction. This could resuspend particles in the short term, exposing ESA-listed salmonids to gill abrasion and other effects listed above. ODOT will maintain a dry isolated work area, utilizing pumps if needed to ensure that this does not occur.

The effects of these activities on OC coho salmon and aquatic habitat will be limited by construction methods and approaches, included in the project design, that are intended to avoid or minimize impacts. The BA lists conservation measures and best management practices (BMPs) on pages 17 to 27 that will enable minimization and avoidance of impacts to ESA-listed salmonids.

The proposed action will cause temporary impacts to OC coho salmon and their habitat, but will provide a long-term benefit by reducing local erosion, enhancing riparian vegetation, and re-establishing fish passage. The track hoe will be working directly in the isolated portion of the stream channel. A key trench will be excavated in the stream and large boulders placed at the bottom of the new channel to key in the roughened chute, per NOAA Fisheries hydraulic engineers' request.

Because time is needed to construct the dams and install a diversion pipe, much of the preparation work will likely be done the day before dewatering and fish removal. As the diversions are removed, because of the damming effect on the water above the upper diversion, there is potential for fish stranding as that water level is dropped during demolition of the diversion. Fish could possibly utilize newly-wetted areas artificially created by the diversion. The water level will need to be ramped down and the area above the diversion monitored for fish stranding. Because the roughened chute will be dry, it will take a while for the channel to saturate. If the water is released into the roughened chute, the lower portion of Mill Creek could be de-watered for a period of time until the water level rises. To avoid this the channel must be re-watered slowly, maintaining flow in the portion of the stream below the lower diversion.

NOAA Fisheries expects the proposed action will create beneficial habitat conditions over the long term based on the current condition of the site. In the long term, hydraulic conditions will change within the channel, establishing fish passage and allowing access to additional spawning and rearing habitat. In the short term, a temporary increase in sediment entrainment within the isolated work area, turbidity, and temperature.

2.1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation."

NOAA Fisheries is not aware of any specific future non-Federal activities within the action area that would cause greater effects to listed species than presently occurs.

Non-Federal activities within the action area are likely to increase due to a projected 36% increase in human population between 2000 and 2025 in Oregon (EPA 2004). Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, increasing as population density rises. As the human population in the state continues to grow, demand for actions similar to the subject project likely will continue to increase as well. Each subsequent action may have only a small incremental effect, but taken together they may have a significant effect that would further degrade the watershed's environmental baseline and undermine the improvements in habitat conditions necessary for listed species to survive and recover.

2.1.6 Conclusion

After reviewing the best available scientific and commercial information available regarding the current status of the OC coho salmon ESU, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, NOAA Fisheries concludes that the action, as proposed, is not likely to jeopardize the continued existence of OC coho salmon.

Our conclusion is based on the following considerations: (1) All in-water work will occur at a time of year when abundance of adult and juvenile OC coho salmon is low and construction should be completed in a week; (2) the operation will be isolated from the wetted channel and fish salvage will occur; (3) potential increases in turbidity will be short-lived; (4) erosion control measures will be in place throughout the construction period; and (5) the effects of this action are not likely to impair properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.7 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new

species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending conclusion of the reinitiated consultation.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

However, the incidental take statement included in this conference opinion does not become effective until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

2.2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of OC coho salmon because of harm from project failure, the potential for injuring and/or killing individual fish during the work area isolation, and delayed mortality due to handling during the fish salvage process. Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term harm to habitat features or by long-term changes to OC coho salmon populations. Therefore, even though NOAA Fisheries expects some low-level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as these, the NOAA Fisheries designates the expected level of take as "unquantifiable." Based on the information in the BA, NOAA Fisheries anticipates that an unquantifiable amount of incidental take is reasonably certain to occur as a result of the actions covered by this Opinion.

In addition, NOAA Fisheries expects that the possibility exists for handling OC coho salmon during the work isolation process, which will result in incidental take to individuals during the

construction period. NOAA Fisheries anticipates that incidental take of up to 10 juvenile OC coho salmon (8 non-lethal and 2 lethal) could occur as a result of the fish salvage process. This take estimate is based on approximately 100 m^2 of stream habitat that will be dewatered during work area isolation. The extent of the take is limited to OC coho salmon within the action area. The extent of the take includes the streambed and streambank of Mill Creek extending approximately 15 m upstream to the upper diversion and 244 m downstream to the lower diversion.

2.2.2 Reasonable and Prudent Measures

These reasonable and prudent measures are discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the contract, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of OC coho salmon resulting from the action covered by this Opinion. The FHWA shall require measures that will:

1. Avoid or minimize the amount of incidental take from rock placement activities in the channel of Mill Creek by requiring measures be taken to limit the duration and extent of rock placement in the action area, reduce direct harm, and to schedule such work when the fewest number of fish are expected to be present.

2. Avoid or minimize incidental take from general construction by excluding unauthorized actions and applying conditions that avoid or minimize adverse effects to water quality and riparian systems.
3. Ensure effectiveness of implementation of the reasonable and prudent measures by requiring that all erosion control measures and plantings for site restoration, shall be monitored and evaluated both during and following construction.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (rock placement) and minimize direct harm, the FHWA shall ensure that:

a. Conservation goal. All actions intended for streambank protection will also provide the greatest degree of natural stream function achievable through maintenance of existing natural features.

b. Rock Placement
   i. Rock may be used for the following purposes and structures.
      (1) The downstream end of the chute will be keyed in with large enough boulders to anchor into the bedrock and stabilize the channel.
      (2) Hydraulic shadow within the channel.
      (3) Rock must be evenly graded and mixed as it is put into place.
      (4) When the low-flow channel is designed, the outside curves should be constructed (soft spots) so that natural flow processes can create pool habitat.

c. After completion of the project, the existing channel should be re-watered in a way that will not significantly impact water quality or cause fish stranding.
   i. The diversion pipe shall be maintained in place while slowly dismantling the upper and lower dams. This will allow the new channel to slowly water-up, while still maintaining flow in the lower channel below the project. Because the area above the upper dam has temporarily expanded usable habitat for fish, slowly ramping the water will allow fish to enter the actual low-flow channel.
   ii. An ODOT or ODFW biologist shall be on site to monitor for fish stranding during this process.
   iii. The existing flow downstream from the project will be maintained throughout the construction.

d. Any pump used for dewatering or diverting authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries' fish screen criteria.

2. To implement reasonable and prudent measure #2 (general conditions for construction, water quality, direct harm, operation and maintenance), the FHWA shall ensure that:

a. Timing of in-water work. In-water work will be completed between July 1 and August 31, a period of time when presence of OC coho salmon is expected to be low. Downstream fish passage will be maintained throughout the project.

b. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

c. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[1]

d. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.

e. Pollution and Erosion Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by FHWA or NOAA Fisheries.

   i. Plan Contents. The Pollution and Erosion Control Plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

      (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

      (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

      (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

      (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

      (5) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

   ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[2]

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[1] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

[2] "Working adequately" means no turbidity plumes are evident during any part of the year.

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4 feet per second.

iii. Spawning areas. No construction discharge water may be released within 300 feet upstream of active spawning areas.

g. Preconstruction activity. Before significant[3] alteration of the project area, the following actions must be completed.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[4]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

h. Heavy Equipment. Use of heavy equipment will be restricted as follows.

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained, and stored as follows.

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[3] "Significant" means an effect can be meaningfully measured, detected or evaluated.

[4] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 46 m or more from any stream, waterbody, or wetland.

(2) All vehicles operated within 46 m of any stream, waterbody, or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 46 m of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

i. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged, or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood,[5] native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

j. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 91 m upstream of spawning habitats. Water management plans must be approved in writing by NOAA Fisheries before the start of isolation.

k. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.

[5] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[6]

iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

iv. Captured fish must be released as near as possible to capture sites.

v. ESA-listed fish may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

l. Earthwork. Earthwork (including excavation, filling and compacting) will be completed as quickly as possible.

i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

m. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

iii. Remediation work. All remediation work shall be completed during the in-water work period and equipment must be above OHW.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

v. Fertilizer. No surface application of fertilizer may occur within 50 feet of any stream channel.

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[6] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the FHWA shall ensure that:

   a. Within 120 days of completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the FHWA's success meeting their permit conditions. This report will consist of the following information.
      i. Project identification.
         (1) Project name.
         (2) Starting and ending dates of work completed for this project.
         (3) The FHWA contact person.
      ii. Isolation of in-water work area. All projects involving isolation of in-water work areas must include a report of any seine and release activity including:
         (1) The name and address of the supervisory fish biologist.
         (2) Methods used to isolate the work area and minimize disturbances to fish species.
         (3) Stream conditions before and following placement and removal of barriers.
         (4) The means of fish removal.
         (5) The number of fish removed by species.
         (6) The location and condition of all fish released.
         (7) Any incidence of observed injury or mortality.
      iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.
      iv. Site restoration. Documentation of the following conditions:
         (1) Finished grade slopes and elevations.
         (2) Log and rock structure elevations, orientation, and anchoring, if any.
         (3) Any changes in planting composition and density.
         (4) A plan to inspect and, if necessary, replace failed plantings and structures, including the compensatory mitigation site.
      v. Photographic documentation of environmental conditions at the project site before, during and after project completion.
         (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
         (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
         (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other

visually discernable environmental conditions at the project area, and upstream and downstream from the project.

vi. Monitoring. On an annual basis, for 5 years after completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the FHWA's success in meeting their habitat restoration goals of any riparian plantings. This report will consist of the following information.

(1) Project identification.
   (a) Project name.
   (b) Starting and ending dates of work completed for this project.
   (c) The FHWA contact person.

(2) Riparian restoration. Documentation of the following conditions.
   (a) Any changes in planting composition and density.
   (b) A plan to inspect and, if necessary, replace failed plantings and structures.

(3) Hydrology monitoring of the new channel. Documentation of the following elements.
   (a) Water velocity profiles throughout the channel during low, medium and migratory flows.
   (b) Observations of juvenile and adult fish usage and passage.
   (c) Survey of the channel to determine whether goals were met on design and if improvements can be made to enhance fish passage or what remediation needs exist.
   (d) Because this roughened chute is experimental and may have hydraulic changes associated with it, the streambanks downstream from the project must be monitored on an annual basis to ensure there is no damage associated with the armoring of the streambed.

vii. Monitoring reports will be submitted to:

NOAA Fisheries
Oregon State Habitat Office
Attn: 2004/00530
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or State action that would adversely affect EFH (§305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries' EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of federally-managed Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. For this consultation, the action area includes all riverine habitats accessible to anadromous salmon from 15 m upstream of the culvert to the upper diversion and 244 m downstream to the lower diversion. This area has been designated as EFH for Chinook and coho salmon.

3.4 Effects of Proposed Action

The proposed action will temporarily adversely affect rearing and migration habitat and water quality for Chinook and coho salmon.

3.5 Conclusion

The proposed action may adversely affect the EFH for Chinook and coho salmon in the action area.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA and all of the reasonable and prudent measures and the terms and conditions contained in section 2.2.2 and 2.2.3 are applicable to EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(k)).

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